U.S. Fish & Wildlife Service

Fairbanks

Fish & Wildlife Field Office

Chandalar River Sonar Project

The Fairbanks Fish & wildlife Field Office has conducted Yukon River tributary salmon escapement studies since 1986. One of the most notable is the Chandalar River sonar project which monitors the escapement of fall chum salmon. Sonar spawning escapement estimates have far exceeded previous aerial survey counts. The Chandalar River fall chum salmon population is now recognized as the largest stock in the Yukon River drainage. Adding this stock to the United State's contributions to the Yukon system has played an important role in treaty negotiations with Canada.

Because of the importance of this stock as a refuge and subsistence resource, and the recent declining trend of many Yukon River salmon stocks, the station has used state-of-the-art split-beam sonar technology to provide annual spawning escapement estimates since 1995. Split-beam sonar can determine the acoustic size and physical location of a target in the beam, allowing determination of direction of travel (upstream or downstream). This allows improved identification of upstream swimming fish.

Elliptical- beam transducers are deployed nearshore from each bank to optimize sonar beam coverage and aimed perpendicular to the river current. The systems run 24-h per day from August 8 through September 26. Results show that most chum salmon are oriented close to the bottom, near to shore, and travel upstream.

Past gill netting indicated that chum salmon was the predominant fish species migrating past the sonar site. More recently large groups of least cisco have been discovered migrating up the Chandalar River. Investigations have been initiated to determine and minimize the potential impact the presence of these least cisco may have on chum salmon counts. First is a beach seining program to determine the presence and relative abundance of least cisco during sonar operations. Also an underwater video monitoring system has been deployed to monitor fish swimming through the sonar, and evaluate the differences in the returning echos from the different species. Finally radio telemetry has been applied to gain least cisco life history information .

The population size of Chandalar River fall chum salmon has decreased substantially in recent years. The average annual population was 230,000 fish from 1995 to 1997. From 1998 to 2000, the average run size dropped to 77,000 fish. Other monitored tributaries in the Yukon River drainage experienced similar trends

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